

OCCUPATIONAL EXPOSURES TO MEVINPHOS  
(PHOSDRIN) REPORTED BY PHYSICIANS  
IN CALIFORNIA DURING 1981

By

Keith T. Maddy, Staff Toxicologist  
Clifford Smith, Environmental Hazards Specialist III  
John Lowe, Environmental Hazards Specialist

HS-997 July 15, 1982

California Department of Food and Agriculture  
Division of Pest Management, Environmental  
Protection and Worker Safety  
Worker Health and Safety Unit  
1220 N Street, Sacramento, California 95814

SUMMARY

There were 62 exposures to mevinphos reported by physicians to the California Department of Food and Agriculture in 1981. All of these exposures resulted in suspected systemic illness. With the exception of a single incident involving 38 field workers exposed to mevinphos residue, the majority of mevinphos-related illnesses occurred in occupations requiring handling of pesticide concentrate. Many illnesses (excluding the single field worker incident) occurred in the hot, summer months. Mevinphos is the most toxic organophosphate in common use in California, and is responsible for a significant number of user illnesses each year. Constant attention by both employers and employees is necessary to avoid excessive exposure to this pesticide.

## INTRODUCTION

Reports of suspected pesticide-related illnesses are submitted, by law, from physicians to the county health departments, then forwarded to the county agricultural commissioners offices. The agricultural commissioners' offices have primary responsibility for investigating the circumstances surrounding the incident, and ascertaining presence or absence of pesticide exposure. Completed investigations are forwarded to CDFA's Worker Health and Safety Unit and classified according to work category, pesticide(s) involved and illness type. Whenever possible, follow-up investigations, in person or by telephone, were conducted several months following exposure to determine more closely the presence (or absence) and duration of symptoms. Whenever contact with an exposed worker was made, a synopsis of the interview was included in the individual narrative.

Mevinphos is an extremely toxic, though rapidly metabolized, organophosphate, equally able to cause toxicity from dermal, inhalation, and oral exposure. The rat, oral, LD<sub>50</sub> ranges from 3.7 - 12 mg/kg, while the rabbit, dermal LD<sub>50</sub> ranges from 16-34 mg/kg.

## CASE STUDIES

A worker mixing and loading mevinphos for an aerial (helicopter) application had to reach inside the mix tank with a small bucket to scoop out the remnants of poorly mixed diluted formulation, after each of four to five applications that morning. He was wearing protective clothing, but no respirator. After his last job, he began to experience blurred vision, nausea, sweating, muscle twitching, uncoordination and slurred speech. He was admitted to the hospital and administered atropine by a physician. Though the doctor recommended three days of hospitalization, the patient checked out after 24 hours. He returned to work after three days, but did not mix or load pesticides. A follow-up investigation was conducted three months later, at which time he was still off work with pay, until his blood cholinesterase levels reach normal limits (he is receiving tests periodically). Three months after the incident he still experienced tiredness and occasional dizziness when standing. This incident was caused by a combination of factors: old agitation equipment, use of a sticky spray adjuvant which clogged the system, and a failure of the worker to use a respirator. It could have been prevented by proper training, properly maintained equipment, and use of a respirator under these conditions.

A worker was mixing and loading acephate, mevinphos and Metasystox-R for an aerial application. Halfway through the job, he reported that he could "smell acephate" through his respirator; he removed his respirator to knock the pesticide dust out of the filter cartridges. During the second job that morning, he could again smell pesticides through his respirator. About noon, he began to experience symptoms of sweating, muscular spasms, nausea, vomiting and loss of equilibrium; he was taken to the hospital. At the hospital, he was administered atropine and a blood cholinesterase test. The worker spent 24 hours in the hospital and felt back-to-normal after three days. Reportedly, he has not worked with pesticides since the incident.

Prevention of this type illness could be affected by work procedures designed to limit exposure to dusty pesticides, and an acceptable respiratory protection program, emphasizing cleaning the respirator and use of appropriate cartridges. A follow-up interview indicated that the individual experienced symptoms of nervousness for three days after hospitalization, though his physician attributed this to the effects of atropine.

An operator was mixing and loading mevinphos using a closed system when he splashed concentrate on his pant leg. He removed his pants, washed his leg with soap and water, and put the contaminated pants back on and continued working. Four hours later, he began to experience nausea and a "seasick feeling" and was transported to the hospital. He was hospitalized for two days and lost four days from work. He has experienced no residual symptoms and has not been under a doctor's care. Adequate instruction in the use of the closed system could have prevented this illness. During a follow-up interview nine months later, the victim expressed the opinion that hand-pouring concentrate was safer than use of the closed system, indicating that the system he was using could have been poorly designed. Clothing that has been heavily contaminated with mevinphos should be immediately removed and disposed of or thoroughly cleaned before being worn again. This person's action indicates poor training in proper handling techniques and potential hazards of exposure. The follow-up interview also indicated that no symptoms were experienced during the worker's recuperation.

A mixer-loader for an aerial applicator was loading methomyl (a wettable powder in water soluble packaging) and mevinphos through a closed system for two hours. Forty-five minutes prior to becoming ill, he noticed some chemicals on the sleeve of his coveralls. He washed his arm, but did not change coveralls. Occasionally, he removed his respirator between loads to wipe his face. Symptoms reported were dizziness, nausea and weakness in the joints. The worker was administered atropine and 2-PAM (2-pralidoxime) and hospitalized for two days. He spent 15 days away from work. The worker was provided protective equipment and clothing. He did not consider the contamination to his coveralls to be serious and considers that this major exposure was from inhalation of fumes produced by the mixing of the chemicals. This illness could have been prevented by changing coveralls (after washing the affected area) immediately upon noticing contamination and ensuring the closed system is in good operating condition before use. In order to maintain the integrity and resultant protection offered by the closed system, the mix tank lid should not be opened after introduction of the liquid concentrate pesticide (in this case mevinphos). In most cases this means that the powdered pesticide must be added first. A follow-up interview revealed that the victim didn't experience any symptoms during his recuperation, except for observing the presence of "pinpoint pupils" two months.

A worker was applying mevinphos by ground for over 15 hours on two successive days. He was apparently not given proper training on pesticide use, nor given proper protective equipment or clothing. He became very ill

(unspecified symptoms) that night and was transported to the hospital a day later. At the hospital, he was treated with atropine and 2-PAM, then released two days later. As of four months after the incident, he was under a doctor's care, and had not returned to work. Prevention of this incident could occur with better compliance with the department's worker safety regulations including adequate training, use of a closed system, and proper use of protective clothing and equipment.

Two employees claimed that continuous mixing, loading and spraying of insecticides, over several months, with prolonged exposure, had caused the following symptoms: blurred vision, wheezing, nausea and tremors. They reported that spraying had been done under excessively windy conditions, allowing dilute spray to drift onto the tractor driver. They also reported that numerous Category I and II liquid pesticides, including mevinphos, were occasionally hand poured, rather than pumped through a closed system. Cholinesterase determinations, undertaken as part of a medical supervision program, were consistently within normal limits for each individual. They were not hospitalized and, shortly after, left their jobs. These incidents could be better clarified and remedied by promptly bringing them to the attention of the county agricultural commissioner's office. Employees have the right to a workplace that is as safe as possible. Normally, an employee complaint triggers one or more types of investigations of the employer's operations and equipment.

An employee was applying mevinphos, propargite and methomyl when the spray rig broke down. The victim drained the tank, rinsed it with water, emptied it and allowed it to stand overnight with the hatch open. He entered the tank the next morning to make repairs, wearing boots, respirator, gloves and coveralls. After completing repairs, he loaded the tank with the materials cited above. Protective clothing and equipment were still worn. The victim stated that while pouring mevinphos and methomyl, some of the material got into his glove. Also, the tank overflowed while filling, splashing water on the victim's coveralls. On a couple of occasions, he removed his respirator, due to the heat of the day (this incident occurred in July). That afternoon he began feeling ill and had a co-worker take him home. That evening, his symptoms worsened and he was transported to the hospital. He was hospitalized for three days and treated with atropine. Cholinesterase levels in the blood did not appear within normal limits when compared to baseline values. The employee had been provided with adequate training. His opinion was that the illness occurred during loading and application. He lost five days from work. This illness could be prevented by making the employee aware that poisonings can occur from dermal exposure to very small quantities of pesticide concentrates, and that immediate decontamination when protective clothing or gloves are breached is essential to preventing the onset of illness.

An employee, mixing, loading and applying mevinphos, removed his respirator due to the heat of the day. Later that day, while driving back from the job, he began feeling ill (unspecified symptoms) and was transported to the hospital. Atropine was administered and cholinesterase values (RBC and plasma) were depressed when compared to previously drawn cholinesterase

baselines. A closed system was used for mixing and loading, however, the employee's supervisor attributed the illness to fumes emitted from the mix tank, once the employee had removed his respirator. Prevention of this illness could be effected by ensuring that the closed system is properly operating, and that the employee understands its operation. Employee acceptance of respirator use can be facilitated by reserving the early morning hours for applying highly toxic materials.

An employee was mixing and loading mevinphos, acephate and methomyl through a closed system. He had been wearing the following safety equipment: coveralls, gloves, respirator, hat and boots. He could not recall how many hours he had worked that day, or how he had become ill. He stated that he wore dirty coveralls, although the employer had told him to wear clean coveralls. An audit of the employer's records indicated that the required training and cholinesterase baseline records were not available for this employee. In a follow-up interview conducted, it was revealed that the employee experienced tiredness and aches in the joints up to two months after the incident. He had been hospitalized one day and lost three days from work. Prevention of this illness requires that the employer provide training, cholinesterase baseline, protective clothing and equipment. Proper training could make the employee aware that avoidance of illness depends upon proper use and maintenance of protective clothing and equipment. Training can also provide the awareness that illness can be produced by exposure to relatively small quantities of pesticide formulation.

An employee was mixing and loading mevinphos and dimethoate without a closed system, though one was available. He was working alone, but periodically supervised by the applicator. The employee wore only coveralls for protective clothing and equipment. After approximately an hour of work, he began to feel ill with signs and symptoms of nausea, vomiting, abdominal cramps, slurred speech, muscular twitches and pinpoint pupils. Prior to entering the hospital, the employee had removed his coveralls and street clothing and showered, but put the contaminated street clothing on again. He was transported to the emergency room and administered atropine. The emergency room staff reported that the employee's clothes smelled of insecticide; the presence of insecticide was confirmed by residue analysis of the clothing. The employee did not recall how pesticides got on his clothing; in his opinion, he was exposed to fumes during mixing and loading. A follow-up interview revealed that the employee still experienced symptoms of nausea, dizziness, slurred speech and tiredness two months after the incident. A review of the employer's records indicated the employee had received proper training and medical supervision, although the employee stated he did not understand how to use the closed system. He was hospitalized for four days and did not return to work with the firm.

An employee had been transferring mevinphos from 55 gallon drums to a bulk storage container. When he unscrewed the plug at the top of the bulk tank he dripped some of the liquid adhering to the plug onto his thigh. When he had noticed the spill as a cold sensation on his skin, he showered

and changed clothes. By this time, he was experiencing symptoms of illness (unspecified) and was transported to the hospital. He was treated with atropine upon arrival and held for two days for observation. A follow-up interview revealed that the employee felt "tired and sluggish" and had symptoms of nausea and dizziness two months after the incident. He lost no additional time from work. This incident illustrates the necessity for the employee to exercise extreme caution while handling pesticide concentrate. Though the employee decontaminated upon noticing the spill, his protective clothing had been penetrated by the concentrate. Proper training should create an awareness that decontamination must be performed before clothing has been penetrated. The employee should periodically check his clothing for the presence of spills.

An employee mixed and loaded mevinphos, carbofuran and dimethoate without the benefit of closed system or protective equipment (gloves or respirator). He had worked for six to seven hours before feeling ill. Signs and symptoms included weakness, dizziness, nausea and vomiting. He was discharged a few hours later after reporting that he felt "fine." He was considered asymptomatic during a follow-up visit to the physician three days later. Training in the necessity for and proper use of protective clothing and equipment would be instrumental in preventing illnesses of this nature.

An employee became exposed to mevinphos while attempting to repair a pump on the closed system used for loading a helicopter. He removed his respirator to inspect the interior of the system. Several hours later, he began to experience headache, shortness of breath, irregular heartbeat, "fluttering eyes" and a "red tinge" to his vision. He was admitted to the hospital and treated with atropine. He lost three days from work.

An employee, mixing and loading mevinphos without the benefit of a closed system along with methomyl and endosulfan wettable powders, removed his gloves between loads and dusted off his clothes with them. Immediately prior to this, he had removed his goggles and respirator. While dusting off his clothes, a gust of wind came up and blew dust into his eyes and face. At the hospital, he reported the following symptoms: nausea and blurring vision. He was treated with atropine and released. A check of the employer's records revealed no training records available for this employee. He lost one day from work. Employees should be aware of wind conditions while working with pesticides, and take precautions such as working upwind, to minimize exposure. Adequate training should mention this, as well as inform the employee of the necessity for loading highly toxic liquids through a closed system.

An employee, who was unaware he was loading mevinphos, operated the wrong lever on the closed system, spilling some of the material on the leg of his coveralls. He wiped off the spill and changed coveralls, then continued work. A half-hour later he began to feel ill, exhibiting signs of muscular tremors and salivation. He was transported to the hospital, administered atropine and given a total body bath. He was hospitalized four days and lost three weeks from work. This incident shows the need for adequate training in the operation of the closed system. Also, it is a responsibility of the employer to see that the employee is aware of the hazards of materials he is working with.

Thirty-eight field workers harvesting lettuce were exposed to mevinphos when they entered the field prior to the expiration of the 48-hour reentry interval. Three county inspectors had also been exposed. The field had been treated by mistake when a message from the grower notifying the applicator to cancel the application failed to be delivered. Symptoms included headaches, blurred vision and nausea. All the workers were taken to the hospital emergency room, bathed, given hospital clothing and had blood samples drawn for cholinesterase testing. Two patients were held overnight and the remainder had been released the same day. Total hospitalization for the 38 people involved was two days and total workdays lost was at least 67; two individuals were away from work for 21 days each. This incident emphasizes the necessity for communication between the grower, advisor and operator to prevent its reoccurrence. This is especially true for high value crops, which will be treated close to harvest and be hand harvested.

A field worker was cultivating next to a field sprayed with mevinphos. There was a slight breeze, and he received some drift from the application. Later that day, he experienced nausea, headache and vomiting. Ten days later, he still did not feel well, and visited a doctor, who drew blood samples for cholinesterase. The employee was not hospitalized and lost no time from work. Avoidance of undesirable drift requires proper application methods, properly calibrated and serviced equipment and careful observance of wind and weather conditions. The employee should have promptly reported to a doctor if he suspected pesticide exposure.

An employee was mixing and loading mevinphos for an aerial application when a valve on the closed system malfunctioned, spraying him in the face. Symptoms of nausea and muscular tremors developed quickly. He drove himself to the doctor's office and was subsequently transported to the hospital. A blood sample was drawn for cholinesterase testing, and atropine was administered. Days of hospitalization and disability were unspecified and the employee could not be located for a follow-up interview. This emphasizes the need for a properly serviced and operating closed system.

#### DISCUSSION

Mevinphos is a highly toxic organophosphate insecticide, and human exposure to small quantities of the pesticide can result in serious acute illness. Mevinphos is formulated and sold as either an emulsifiable concentrate or a water soluble liquid. Consequently, this toxicity Category I pesticide requires a closed system during mixing and loading operations prior to application.

The symptoms of an illness due to mevinphos exposure are common to those observed with all organophosphate poisonings. The symptoms (e.g., pinpoint pupils, headache, nausea and perspiration) are elicited by the reduced function of acetyl-cholinesterase. These systemic effects are reflected by the total number of systemic illnesses which occurred during the past five years (Table 1). Ninety-four percent of all reported occupational illnesses due to mevinphos during 1976 through 1981 were systemic. All 62 of the 1981 mevinphos-related illnesses were systemic.

Occupations which include the handling of the undiluted formulations of mevinphos-related are more liable to result in pesticide-related illnesses, as a single exposure to the concentrate may be sufficient to produce an illness (Table 1). Sixty-three percent of the total number of reported illnesses due to mevinphos during the past five years affected mixer/loaders, manufacturing/formulators, and ground applicators (Table 1).

In 1980, 42 percent of the mevinphos-related illnesses involved occupations requiring the handling of mevinphos concentrate. A single episode involving 21 field workers exposed to mevinphos residue accounted for 44 percent of the 1980 illnesses. This occurrence was repeated in 1981, with 69 percent of the total mevinphos-related illnesses clustered in a single incident involving field workers. This occurrence demonstrates that reentry regulations must be carefully followed when using mevinphos. Though 30 percent of all mevinphos-related illnesses occurred in employees mixing and loading or applying the pesticide, this fraction increases to 95 percent when the single field worker incident is excluded.

The days of hospitalization and disability from mevinphos-related illnesses during the past six years, as reported by county investigators, are summarized in Tables 2 and 3. In addition to the data provided by the physicians and the county investigators, a follow-up survey was conducted in March 1982 in which 14 of the 59 persons exposed in 1981 were contacted for purposes of determining the presence and duration of residual symptoms. Out of these 14 contacts, one experienced no problems during recuperation. One experienced symptoms of nervousness for three days after the incident. Nine experienced symptoms of nausea, headaches, and/or dizziness from one to three months following exposures. Three have experienced symptoms of sluggishness or tiredness one to two months following exposure.

The seasonal occurrence of mevinphos illnesses is portrayed in Table 4. The majority of illnesses during the last five years occurred in late spring through early fall. Although more mevinphos is used during the warmer months, the increase in illnesses is not proportional to the pounds of mevinphos applied. Additional factors which may increase the incidence of mevinphos illnesses during this time of the year are: (1) greater volatility of mevinphos at higher temperatures, (2) greater percutaneous penetration with higher ambient temperatures, and (3) the desire to wear less protective equipment and clothing when the weather is hot.

Table 5 summarizes by county the distribution of mevinphos illnesses which occurred in the past five years. All of the 1980 illnesses occurred in 10 of the 58 counties.



TABLE 1

ILLNESSES DUE TO EXPOSURE TO MEVINPHOS  
REPORTED BY TYPE OF ILLNESS AND JOB CATEGORY  
FOR 1976 THROUGH 1981 IN CALIFORNIA

	<u>1976</u>	<u>1977</u>	<u>1978</u>	<u>1979</u>	<u>1980</u>	<u>1981</u>
<u>Suspected Systemic Illnesses</u>	<u>58</u>	<u>48</u>	<u>37</u>	<u>29</u>	<u>48</u>	<u>62</u>
Mixer/Loader	22	32	18	12	11	13
Manufacture/Formulation	8	1	3	3	2	0
Ground Applicator	12	6	2	7	7	3
Flagger	4	2	4	0	1	0
Field Worker	4	0	1	0	22	41
Aerial Applicator	1	1	0	0	0	0
Worker Exposed to Drift	1	0	1	0	0	1
Truck Loader/Warehouse	0	2	2	2	0	1
Cleaner/Repairer	1	3	1	1	1	0
Indoor Worker	1	0	0	0	0	0
Other Type Pesticide Exposure	2	1	3	0	3	2
Exposed, Not Ill	0	0	2	0	0	0
Self-Employed (Farmer)	0	0	0	4	1	1
Unconfirmed Report	2	0	0	0	0	0
<u>Skin Exposure Incidents</u>	<u>6</u>	<u>1</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>
Irrigator	0	0	0	0	0	0
Field Worker	3	1	0	0	0	0
Mixer/Loader	1	0	0	0	0	0
Manufacture/Formulation	1	0	0	0	0	0
Exposed, Not Ill	1	0	0	0	0	0
<u>Eye Exposure Incidents</u>	<u>3</u>	<u>0</u>	<u>1</u>	<u>1</u>	<u>0</u>	<u>0</u>
Cleaner/Repairer	0	0	0	0	0	0
Field Worker	1	0	0	0	0	0
Mixer/Loader	2	0	0	0	0	0
Manufacture/Formulation	0	0	1	0	0	0
Ground Applicator	0	0	0	1	0	0
<u>Skin and Eye Incidents</u>	<u>0</u>	<u>0</u>	<u>1</u>	<u>0</u>	<u>0</u>	<u>0</u>
Manufacture/Formulation	0	0	1	0	0	0
<u>Total Illnesses to Mevinphos Exposure</u>	<u>67</u>	<u>49</u>	<u>39</u>	<u>30</u>	<u>48</u>	<u>62</u>

TABLE 2

ILLNESSES DUE TO EXPOSURE TO MEVINPHOS  
REPORTED BY DAYS OF HOSPITALIZATION AND DISABILITY  
FOR 1976 THROUGH 1981 IN CALIFORNIA

<u>Hospitalization</u>	<u>1976</u>	<u>1977</u>	<u>1978</u>	<u>1979</u>	<u>1980</u>	<u>1981</u>
None	48	37	22	8	37	51
1 day	4	5	5	8	3	4
2 days	8	1	6	3	6	4
3 days	3	5	1	3	2	1
4-5 days	2	0	2	3	0	2
6 days	0	1	0	0	0	0
7 days	0	0	0	1	0	0
Not determined	2	3	3	4	0	0
 <u>Period of Disability*</u>						
None	10	5	9	6	9	4
1 day	5	3	0	3	4	2
2 days	9	3	2	2	1	2
3-4 days	6	6	2	7	4	6
5-7 days	6	7	3	4	4	38**
8-14 days	3	5	1	0	1	2
3-4 Weeks	3	4	5	1	2	2
More than 4 weeks	3	0	1	1	1	0
Unspecified	22	19	16	6	21	6

\*Period of disability for 1976 through 1978 is the period of time, estimated by the physician, that the worker is to be off work, and it includes the days hospitalized. The estimation is made at the time of the worker's initial visit to the physician. In 1979 the days of disability were determined with more certainty in the follow-up investigations.

\*\*The majority of these occurrences are from a single episode involving field workers.

TABLE 3

ILLNESSES DUE TO MEVINPHOS EXPOSURE  
REPORTED BY TOTAL ESTIMATED DAYS OF HOSPITALIZATION  
AND DISABILITY FOR 1976 THROUGH 1981 IN CALIFORNIA

<u>Total Estimated Days of Hospitalization*</u>					
<u>1976</u>	<u>1977</u>	<u>1978</u>	<u>1979</u>	<u>1980</u>	<u>1981</u>
44	37	38	42	21	19
<u>Total Estimated Days of Disability***</u>					
<u>1976</u>	<u>1977</u>	<u>1978</u>	<u>1979</u>	<u>1980</u>	<u>1981</u>
579	491	422	131	163	284

\*\*\*In 1979 through 1981, investigators more accurately determined the actual days of disability and hospitalization incurred by the worker.

TABLE 4

ILLNESSES DUE TO EXPOSURE TO MEVINPHOS  
REPORTED BY MONTH OF OCCURRENCE  
FOR 1976 THROUGH 1981 IN CALIFORNIA

<u>Month</u>	<u>1976</u>	<u>1977</u>	<u>1978</u>	<u>1979</u>	<u>1980</u>	<u>1981</u>	<u>Total</u>
January	1	3	1	0	0	1	6
February	5	0	2	0	1	2	10
March	6	4	1	0	1	1	13
April	4	6	2	0	2	41	54
May	3	2	2	2	2	0	11
June	4	4	5	5	2	4	24
July	13	5	15	3	25	4	65
August	8	8	4	7	6	5	38
September	11	5	4	5	3	4	32
October	3	9	3	5	6	0	26
November	8	3	0	3	0	0	14
December	1	0	0	0	0	0	1
Total	67	49	39	30	48	62	294

TABLE 5

ILLNESSES DUE TO EXPOSURE TO MEVINPHOS  
REPORTED BY COUNTY OF OCCURRENCE  
FOR 1976 THROUGH 1981 IN CALIFORNIA

<u>County</u>	<u>1976</u>	<u>1977</u>	<u>1978</u>	<u>1979</u>	<u>1980</u>	<u>1981</u>	<u>Total</u>
Alameda	0	1	0	0	0	1	2
Fresno	7	2	5	4	8	2	28
Imperial	8	8	5	2	1	2	26
Kern	12	3	9	3	4	2	33
Kings	2	1	0	0	1	0	4
Los Angeles	3	2	0	3	0	0	8
Madera	1	0	0	0	0	0	1
Merced	1	8	1	0	0	1	11
Monterey	9	8	8	5	27	43	100
Orange	3	3	0	0	0	0	6
Riverside	3	5	0	0	1	0	9
San Benito	1	1	0	1	1	2	6
San Bernardino	0	1	0	1	0	0	2
San Joaquin	1	0	1	1	1	2	6
San Luis Obispo	1	0	1	0	0	0	2
Santa Barbara	3	1	0	0	2	0	6
Santa Clara	0	0	0	6	0	0	6
Santa Cruz	7	1	4	2	0	2	16
Siskiyou	-	-	-	-	-	1	1
Stanislaus	-	-	-	-	-	1	1
Tulare	2	0	6	2	0	1	11
Ventura	1	1	0	0	1	2	5
Yolo	2	2	0	0	1	0	5
Total	67	49	39	30	48	62	294